MW & BC Funded Projects
MSU
1982-83

TITLE: Cost of Production Study

INSTITUTION: Montana State University

DEPARTMENT: Montana Extension Service

RESEARCHERS: Duane Griffith, Dwane Miller

AMOUNT FUNDED: $9,810.00

OBJECTIVE:
1) The purpose of this project is to develop and maintain current data bases of cost of production information and methods by which farmers can refer to and use as a foundation for developing their individual production and marketing strategies. The data base would also allow economic evaluation of alternative crops such as sunflowers, safflower, rape or mustard in conjunction with a flexible cropping rotation or as a new cash crop.

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TITLE: Stored Grain Insects

INSTITUTION: Montana State University

DEPARTMENT: Entomology

RESEARCHERS: Wendell Morrill

PERSONNEL: Everett Snortland (State ASCS Director), Krby Lohr (Undergraduate Student)

AMOUNT FUNDED: $700.00

OBJECTIVE:
1) Document % infestation of grain bins and determine species of insects which are causing damage; determine if preventative chemical treatments are effective in preventing infestations.

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TITLE: Cutworm Control in Winter Wheat

INSTITUTION: Montana State University

DEPARTMENT: Entomology

RESEARCHERS: Wendell Morrill

AMOUNT FUNDED: $1,470.00

OBJECTIVE:
1) Determine efficacy of new chemicals for cutworm control.

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TITLE: Barley Breeding

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Robert F. Eslick

AMOUNT FUNDED: $55,500.00

OBJECTIVE:
To further investigate barley varieties most suitable for industrial processing into high maltose syrup, alcohol and starch, to develop barley varieties for food uses including barley flour, barley that can be substituted for rice, malting barley, a brewing adjunct, pop barley and sweet barley. (Two pieces of equipment -- a single row binder and an Agtron color reflectance meter were included in this project.)

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TITLE: Purchase of Near Infrared Reflectance Apparatus for the Cereal Quality Laboratory

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Charles McGuire

AMOUNT FUNDED: $3,000.00

OBJECTIVE:
1) Near Infrared Reflectance technology allows the rapid measurement of such quality parameters in wheat and barley as protein percentage, moisture percentage, fiber content, amino acid content, plus other traits as need arises.

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TITLE: Winter Wheat Improvement

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: G. Allan Taylor

AMOUNT FUNDED: $33,360.00

OBJECTIVES:
1) General support for the winter wheat breeding project.

2) Continue support for finishing early generation selection for grain yield and protein.

3) The computerization of recording, storage, analysis and interpretation of data concerning the performance of winter wheat varieties and breeding lines.

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TITLE: Statewide Cooperative Study to Develop Annual Legume/Cereal Rotations for Montana

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: James, Sims, Leon Welty, Arthur Dubbs, Gregory Kushnak, Jerald Bergman, Gilbert Stallknecht, Ronald Lockerman

AMOUNT FUNDED: $15,000.00

OBJECTIVES:
A. Develop cereal-legume rotations for restoring the fertility and productivity of Montana soils.

1) Select species and varieties of annual forage legumes adapted to various dryland and irrigation conditions in Montana.

2) Select species and varieties of annual grain (food) legumes adapted to various dryland and irrigated conditions in Montana.

3) Determine ability of selected food and forage annual legumes to provide residual N for subsequent small grain crops.

4) Determine reduction in N requirement to maximize small grain yields the year following annual legumes.

B. Compare annual legume -- small grain rotations with small grain -- small grain and fallow-small grain rotations.

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TITLE: Modifications of grain drill openers to place fertilizer below the seed

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Science

RESEARCHERS: W. E. Larsen

AMOUNT FUNDED: $11,000.00

OBJECTIVE:

1) Modified openers of at least two types will be designed and constructed for two different drills to test machine design requirements and crop performance from placing fertilizer below the seed. The modified openers will be designed and constructed in the Agricultural Engineering research shop. They will be designed to fit an IHC 150 hoe drill and a Noble drill. These drills are currently used at the Central Research Center at Moccasin and the Northern Research Center at Havre. Field tests will be conducted at these two locations to measure the results of these modifications. Results will be measured in terms of visual

observation of actual seed and fertilizer placement, observation of the condition of the seed bed at planting time, stand counts to determine initial crop response and yield measurements. Additional modifications will be made as needed to improve performance. Standard openers will be used as a check for comparison.

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TITLE: Control of seed and soil-borne diseases of wheat and barley

INSTITUTION: Montana State University

DEPARTMENT: Plant Pathology

RESEARCHERS: D.E. Mathre

AMOUNT FUNDED: $24,280.00

OBJECTIVES:
1) Evaluate the effectiveness of systemic fungicides in controlling root rot and increasing yield of spring wheat and barley.

2) Continue work on assessing the environmental factors influencing development of TCK smut in cooperation with personnel from the Chinese Ministry of Agriculture.

3) Continue evaluation of winter wheat germplasm and breeder lines for resistance to Cephalosporium stripe.

4) Evaluate cultural practices for control of Take-All root rot of spring cereals grown under irrigation.

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TITLE: Improved Winterhardiness for Winter Wheat Production in Montana

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Jarvis H. Brown, Michael J. Wille, G. Allan Taylor

AMOUNT FUNDED: $9.670.00

OBJECTIVE:
1) To help develop winter wheat varieties with increased winterhardiness in Montana environments.

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TITLE: Spring Wheat Breeding

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: W. Larry Alexander, Allen F. Cook (USDA-ARS, Michael R. Bruce

AMOUNT FUNDED: $18,470.00

OBJECTIVE:
1) Support for Montana spring wheat breeding project.

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TITLE: Research Centers Cropping Systems

INSTITUTION: Montana State University

DEPARTMENT: Agricultural Experiment Stations

RESEARCHERS: Various

AMOUNT FUNDED: $31,300.00

OBJECTIVE:
1) To determine which varieties of spring wheat, winter wheat, barley, or oats are most adapted for production under continuous cropping.

2) To determine the feasibility of continuous cropping with spring wheat on dryland when using no-till planting and conventional tillage and planting when the best known methods of weed control, fertilizer practices, and variety selection are applied in conjunction with tall wheatgrass barriers. Comparative crop yields, test weight, protein content, incidence of weeds, diseases, insects, and rodents, tillage

problems and other factors will be documented.

3) To measure yield results during 3 separate growing seasons on spring and winter wheat production under six systems of fallow ranging from full tillage to no-tillage.

4) To evaluate management problems associated with production of grain under the systems employed.

5) To measure soil moisture storage differences attributable to the fallow systems employed.

6) To measure differences in crop moisture use efficiency attributable to the fallow systems employed.

7) To measure yield results and associated problems of grain production under reduced fallow cropping systems.

8) To develop and evaluate a system of simultaneous seeding and fertilizing wheat and barley under reduced tillage conditions.

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TITLE: Computer System Purchase

INSTITUTION: Montana State University

DEPARTMENT: Plant & Soil Sciences

RESEARCHERS: Dwane G. Miller

AMOUNT FUNDED: $32,905.00

OBJECTIVES:
1) Computer hardware, software and printers.

2) Technical help to assist plant breeders in data entry and processing.

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TITLE: Survey of plant parasite nematodes in wheat

INSTITUTION: Montana State University

DEPARTMENT: Enotomology

RESEARCHERS:

AMOUNT FUNDED: $1,850.00

OBJECTIVES:

Determine genera and species of plant parasitic nematodes associated with wheat and make the following comparisons:

1) Nematode genera composition and density in winter vs. spring wheat.

2) Nematode genera composition and density in circle-irrigated vs. dryland wheat.

3) Nematode genera composition and density in lindane treated seed plots vs. untreated plots.